gradually sinking from a greyish white to the dark colour of the disk, situated a little in advance of the centre and to the south of it, and that the planet will be surrounded by a dark nebulous ring, not a bright one.

4 *Buccleuch Road, Dulwich,*
March 25.

Early Transits of Mercury. By the Rev. S. J. Johnson.

On occasion of the transit of *Mercury* in 1861 I found the planet distinctly perceptible on the Sun with an old ship glass carrying a power of 16. Between the introduction of the telescope in the year 1610 and Gassendi's observation in 1631 three transits of *Mercury* took place, each of which was more or less visible to Europe. These were

1615	May 3	Ingress about $6\frac{1}{2}^h$ morn.	Egress about $1\frac{1}{2}^h$ aftern.
1618	Nov. 4	„ „ $11\frac{1}{2}$ morn.	„
1628	May 5	„ „ $2\frac{1}{4}$ aftern.	„

As many telescopes at this period were probably twice as powerful as the glass I have referred to, is it not possible there may be diagrams of Sun-spots extant showing the little round speck of *Mercury*? Galileo's *Macchie Solari* gives several solar spot diagrams for 1613. Scheiner's *Rosa Ursina* contains several for the year 1625, but there are no doubt other works giving the like.

A year before Horrox obtained a successful observation of a transit of *Venus* he looked unsuccessfully for one of *Mercury*. As this is not referred to in any popular modern work, his words may be given:—

"1638, Octob. 20.—Paulo post ortum solis vidi, per telescopium maculas duas in sole, easdem vidi meridie et diebus sequentibus. At *Mercurium* non vidi. Ex calculo Lausbergii fuisset *Mercurius* in centro Solis horâ 5 manè.

Octob. 21.—Manè. Nullum vidi *Mercurium* in sole, ergo *Mercurius* vel ob latitudinem non ivit sub Solem, vel fuit conjunctio nocte præcedente: flavit enim ventus insolitâ violentiâ. Calculus Rudolphinus facit conjunctionem horâ 11·47′ quâ ego non observavi. Observatio autem Gassendi A.C. 1631 Octob. 28 probat conjunctionem fuisse citiùs per horas 4·43. Ergo vera conjunctio fuisset horâ 7·4′ paulo ante ortum Solis: at statim post ortum Solis nihil visum. Ergo latitudo *Mercurii* major erat semidiametro Solis. Quod etiam probat Gassendi observatio." (*Catalogus observationum Jeremiæ Horroccii*, 1672).

Horrox was at Toxteth at the time, before he went to Hoole. His failure does not appear to have been from insufficient telescopic

power. On making an approximate calculation of the places of *Mercury* and the Sun by the same method as for the future transits of the planet (*Monthly Notices*, May 1877) I found *Mercury* slightly escaped a passage across the Sun's disk on this occasion.

Upton Helions Rectory, Crediton,
April 9, 1878.

A Comparison of the Observations of Contact of Venus with the Sun's limb in the Transit of 1874, *December* 8, *made at the Royal Observatory, Cape of Good Hope, with the corresponding observations made at the stations in the Parliamentary Report, and a discussion of the results.* By E. J. Stone, M.A., F.R.S., Her Majesty's Astronomer, Royal Observatory, Cape of Good Hope.

The Cape observations of the times of contact of *Venus* with the Sun's limb at Egress on 1874, December 8, were immediately after the transit forwarded to Greenwich to be worked up with observations of contact made at the other stations. The Cape observations were not, however, included in the Parliamentary Report, and I should not have felt myself at liberty to anticipate the official publication of the results were it not that some values of the solar parallax, supposed to have been derived from their use, have been published in the *Observatory* Magazine for 1878, February. The value of the solar parallax which is given in that magazine, as the result of a comparison between the Cape observations of the phase ζ, or what I call the "real contact," and the corresponding observations at six stations where the contact was retarded at Egress, is $8''{\cdot}495$. I feel certain that no such value of the solar parallax can be fairly derived from our observations, and I have taken some trouble to test this matter by direct computation and comparison of the results. At the time of the transit there were only two instruments at the Cape fit for the delicate work of observing contacts for a determination of a value of the solar parallax. I observed the contacts with the 7-inch telescope by Merz and employed a power of about 200; Mr. Finlay, my first assistant, used a good 4-inch telescope by Dollond and employed a power of about 180. The contact was also observed by Mr. G. Maclear with a small theodolite of which the object glass had an aperture of 1·65 inches. He employed a power of only 23. With such optical means it was of course impossible for Mr. Maclear to attempt to discriminate between changes of the Sun's limb which are presented near the point of contact, and his observation is not available for comparison with contacts made with larger instruments and with greater optical power. But I thought that an observation made by a careful